Course Title:	**Modern Algebra**
Course Code:	**MTLDC102**
Course Coordinator	**V. K. Bhat**
Credits	**4**

Evaluation Scheme Total 100 Marks

Quiz (Total 20 Marks)				Assignment/Project (Total 20 marks) (Minimum Two Assignments or one Project)		Mid-Term	Major Examination	Total
Quiz I (5 marks	Quiz II (5 marks)	Quiz III (5 marks)	Quiz IV (5 marks)			20 marks) (1 ½ Hour Duration)	(40 marks) (3 Hour Duration	100 Marks

WEEKS	TOPICS TO BE COVERED
Week 1	Introduction to groups, subgroups, Groups of Transformations,
Week 2	General and Special Linear Groups, Symmetric group, Dihedral groups
Week 3	The Alternating groups An, Lagrange's Theorem, cyclic groups
Week 4	Examples of groups from codes, Normal subgroups, quotient groups
Week 5	Homomorphism of groups, Fundamental Theorem of group homomorphism
Week 6	Introduction to rings, Subrings, Integral domains
Week 7	Ideals, Prime ideals and Maximal ideals
Week 8	Euclidean domains, Principal ideal domains, Unique factorization domains.
Week 9	Fields, Fields of fractions, quotient rings
Week 10	Homomorphism of rings, Fundamental Theorem of ring homomorphism, Characteristic of a ring, Boolean ring, Polynomial ring
Week 11 (17^{th} -21^{st} March, 2025)	Mid-Term
2^{nd} April, 2025	Showing of Mid-Term Answer Sheets
Week 13	Prime fields, Polynomial ring over a field
Week 14	Field extensions (finite extension, algebraic extension)
Week 15	Galois field
Week 16	Construction of Galois fields GF(2^n)
Week 17 (5^{th} -9^{th} May, 2025)	Revision Week
Week 18 (13^{th} – 22^{nd} May, 2025)	Major Examinations

29th May, 2025	**Showing of Major Exams Answer Sheets**

Course Outcomes:

CO1: Knowing the concepts of Group Theory

CO2: Knowing the concepts of Ring Theory

CO3: Knowing the concepts of Field Theory

CO4: Application of above notions

Recommended Books:

1. **I.N. Herstein, Topics in Algebra, 2nd Edition, Wiley.**
2. **T.W. Hungerford, Algebra, 3rd Edition, Springer.**
3. **Surjeet Singh and Qazi Zameeruddin, Moden Algebra, 9th Edition, Vikas Pub. House.**

Calendar of Quizzes/Assignment etc. to be provided as per below details and exact dates to be fixed in consultation with other course coordinators to avoid overlap of Quizzes of different courses.

Component	Date
Quiz-I	**27th -31st, January 2025**
Quiz-II	**24th -28th February, 2025**
Assignment-I	**10th -12th February, 2025**
Mid-Term	**17-21st March, 2025**
Assignment-II	**21st – 24th April, 2025**
Quiz-III	**7th – 11th April, 2025**
Quiz-IV	**28th April-2nd, May, 2025**
Major Exam	**13th – 22nd May, 2025**

Note:

1. **One surprise Quiz may be fixed out of Quiz-II, Quiz-III or Quiz-IV.**
2. **In case of any deviation in evaluation methodology for courses such as AEC/VAC/SEC shall be mentioned accordingly. The, same shall be approved by the next BOS of school if not done earlier.**

Signature of Course Coordinator : V. K. Bhat